## **CLAIMS**:

An apparatus for simultaneously transmitting terrestrial signals on a common frequency with satellite signals transmitted from a satellite, the satellite transmitting satellite signals at a first frequency to a user location for reception only within a satellite directional reception range about the user location, the apparatus comprising:

- (a) a directional terrestrial transmitter for transmitting terrestrial signals at the first frequency in a limited azimuth range around the location of the terrestrial transmitter, the terrestrial transmitter being located with respect to the user location such that the terrestrial transmitter transmits to the user location along a route which is outside of the satellite directional reception range.
- 2. The apparatus of Claim 1 wherein satellite signals are transmitted from a plurality of satellites in geosynchronous orbit, each satellite separated from each other satellite in a geosynchronous arc by an angle greater than one half of the satellite directional reception range and the satellites together transmit satellite signals to the user location only within a combined satellite signal transmission range about the user location, and wherein:
  - (a) the terrestrial transmitter transmits only in directions which are outside of the combined satellite signal transmission range and an angle equal to one half of the satellite directional reception range outside of the boundaries of the combined satellite signal transmission range.

3. The apparatus of Claim 2 further comprising: a plurality of terrestrial directional transmitters, each transmitting from a 2 (a) different terrestrial transmission location and each transmitting directionally in a 3 limited azimuth range. 4 5 6 4. The apparatus of Claim 1 wherein the first frequency is in a range of 12.2 gigahertz to 7 12.7 gigahertz. 8 5. The apparatus of Claim 1 wherein the first frequency is above 12.2 gigahertz. 6. The apparatus of Claim 1 wherein the satellite directional reception range is approximately eighteen (18) degrees. A method for simultaneously providing terrestrial signals on a common frequency with satellite signals transmitted from a satellite, where the satellite is transmitting at a first frequency along a satellite transmission axis extending from the satellite to a terrestrial 17 user location, the method comprising the steps of: 18 transmitting terrestrial signals at the first frequency in a limited azimuth range (a) 19 from a terrestrial transmitter, the terrestrial transmitter being located with

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respect to the user location so as to transmit to the user location along a

about the user location, wherein the satellite directional reception range

transmission route which is outside of a satellite directional reception range

comprises a limited directional range substantially centered on the satellite 1 2 transmission axis. 3 8. The method of Claim 7 further comprising the step of: 4 transmitting terrestrial signals at the first frequency and within a limited 5 (a) terrestrial azimuth range from a plurality of terrestrial transmitters at different 6 7 8 9. The method of Claim 7 wherein the first frequency is in the range of 12.2 gigahertz to 12.7 gigahertz. 10. The method of Claim 7 wherein the first frequency is above 12.2 gigahertz. 11. The method of Claim 7 wherein the satellite directional reception range is approximately eighteen (18) degrees. An apparatus for facilitating the use of terrestrial transmitted signals which are transmitted on a common frequency simultaneously with satellite signals transmitted 18 19 from a satellite, the satellite transmitting satellite signals at a first frequency to a terrestrial user location along a satellite transmission axis, the apparatus comprising: 20 a terrestrial transmitter for transmitting terrestrial signals at the first frequency 21 (a) to the user location, the terrestrial transmitter being located with respect to the 22

user location such that the terrestrial transmitter transmits to the user location along a route which is outside of a satellite directional reception range about the user location, wherein the satellite directional reception range comprises a limited directional range substantially centered on the satellite transmission axis; and

- (b) a terrestrial receiving antenna at the user location for receiving signals at the first frequency only within a terrestrial directional reception range about a centerline of the terrestrial antenna, the terrestrial antenna being aligned to receive signals transmitted at the first frequency from the terrestrial transmitter location, and being aligned so that the satellite transmission axis is outside of the terrestrial directional reception range.
- 13. The apparatus of Claim 12 wherein satellite signals are transmitted from a plurality of satellites in geosynchronous orbit, each satellite separated from each other satellite in a geosynchronous arc by an angle greater than an angle equal to one half of the satellite directional reception range and the satellites together transmit satellite signals to the user location only within a combined satellite signal transmission range about the user location, and wherein:
  - (a) the terrestrial transmitter transmits only in directions which are outside of the combined satellite signal transmission range and an angle equal to one half of the satellite directional reception range outside of the boundaries of the combined satellite signal transmission range.

- (a) a plurality of terrestrial transmitters each transmitting from a different terrestrial transmission location and each transmitting directionally in a limited azimuth range.
- 7 15. The apparatus of Claim 12 wherein the first frequency is in a range of 12.2 gigahertz to 12.7 gigahertz.
  - 16. The apparatus of Claim 12 wherein the first frequency is above 12.2 gigahertz.
  - 17. The apparatus of Claim 12 wherein the satellite directional reception range is approximately eighteen (18) degrees.

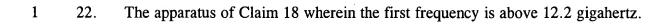
An apparatus for simultaneously transmitting terrestrial signals on a common frequency with satellite signals transmitted from a satellite, the satellite transmitting satellite signals at a first frequency to a user location for reception only within a satellite directional reception range about the user location, the apparatus comprising:

(a) a terrestrial transmitter for transmitting terrestrial signals at the first frequency from a fixed terrestrial location which forms a fixed geometry with the user location and the satellite, the terrestrial transmitter being located with respect to the user location such that the terrestrial transmitter transmits to the user

location	along	a route	which	is (	outside	of tl	he	satellite	directional	reception-range
about the	e user	location	1.							

- 19. The apparatus of Claim 18 wherein satellite signals are transmitted from a plurality of satellites in geosynchronous orbit, each satellite separated from each other satellite in a geosynchronous arc by an angle greater than one half of the satellite directional reception range and the satellites together transmit satellite signals to the user location only within a combined satellite signal transmission range about the user location, and wherein:
  - (a) the terrestrial transmitter transmits only in directions which are outside of the combined satellite signal transmission range and an angle equal to one half of the satellite directional reception range outside of the boundaries of the combined satellite signal transmission range.
- 20. The apparatus of Claim 18 further comprising:
  - (a) a plurality of terrestrial transmitters, each transmitting from a different fixed terrestrial transmission location which forms a fixed geometry with the satellite and the user location.

21. The apparatus of Claim 18 wherein the first frequency is in a range of 12.2 gigahertz to 12.7 gigahertz.



The apparatus of Claim 18 wherein the satellite directional reception range is approximately eighteen (18) degrees.

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